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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,875	02/20/2004	Christoph Schultheiss	K 224	7734

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KLAUSE J. BACH & ASSOCIATES  
PATENTS AND TRADEMARKS  
4407 TWIN OAKS DRIVE  
MURRYSVILLE, PA 15668

EXAMINER
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CHORBAJI, MONZER R

ART UNIT	PAPER NUMBER
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1797

MAIL DATE	DELIVERY MODE
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03/24/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/783,875	<b>Applicant(s)</b> SCHULTHEISS, CHRISTOPH	
	<b>Examiner</b> MONZER R. CHORBAJI	<b>Art Unit</b> 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 September 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 4-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2/20/04</u> .   | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

**This non-final action is in response to the election received on 9/20/2007**

#### ***Election/Restrictions***

1. Applicant's election without traverse of claims 1-3 in the reply filed on 09/20/2007 is acknowledged.
2. Claims 4-9 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected apparatus claims, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 09/20/2007.

#### ***Drawings***

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the drawing in figure 4 must contain no labels to describe the elements listed therein must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for

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consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schoenbach (Bacterial Decontamination of Liquids with Pulsed Electric Fields) in view of Torsten (English Translation, DE 19859459) and Mittal et al (U.S.P.N. 6,093,432).

As to claim 1, Schoenbach discloses a method for the bacterial decontamination of, for example, milk or juices (milk is considered the processing liquid) having microorganisms (experimental results section on page 639) where pulsed electric fields are generated and applied to cause rupture of cell membranes (The effects of pulsed electric fields on biological cell section on page 638) using electroporation technique. The electric fields are only generated between opposing electrodes having a capacitor and switch (pulse shape section on page 640) during the discharge that are energized by a high voltage source as shown in figure 4 on page 640 where the duration of the applied electric field ranges from 1 ms to 50 ns (conclusion section on page 643). Schoenbach further teaches applying sequential electrical pulses (considered as preventing time-overlap) that are separated by 1 ms time intervals (pulse shape section on page 641) where one of ordinary skill in the art would readily recognize that the capacitor is recharged between sequential pulses. Furthermore, Schoenbach discloses a typical characteristic dimensions (considered the longitudinal axes Z of the cells of the process material) of 1micrometer for certain bacteria (right column of the effects of pulsed electric fields on biological cells section on page 638) that is momentarily present in the electrical field of at most 1 microsecond (conclusion section on page 643). As to the threshold potential difference equaling 10 V, Schoenbach recognizes that a 1 V potential across the outer membrane of a cell is necessary but insufficient to cause death by electroporation and further teaches that for pulses of submicrosecond duration, higher electric fields are required (right column of the effects of pulsed electric fields on biological cells section on page 638). One of ordinary skill in the art would

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recognize that for pulse durations of less than 1 microsecond, greater values of electric fields are required, which means higher values for electric field potential. It would have been obvious to one having ordinary skill in the art to determine, through routine experimentation, the length of pulse duration, strength of electric field which would produce the optimum pasteurization of organic process material. It would have been obvious to one of ordinary skill in the art to use higher field strength (10V) and a shorter duration (1ms) in order to provide a quick pasteurization of material.

Schoenbach does not specifically teach whether the electrodes are normal or not to each other and does not teach if the device is flow through having electrodes distributed over a longitudinal area of the reactor where the bottom electrodes are grounded.

Torsten discloses a flow-through electroporation (figure 7, page 4, and paragraphs 5-6 of the description) device. The device has multiple upper and lower electrodes (figure 7:76 and 77) distributed over the longitudinal are of the chamber. The electrodes appear to be staggered within the device, Creating an electric field which is diagonal to the direction of the flowing fluid. This allows large cells to be separated from small cells into a second channel where sufficient large electric fields are applied separately to the large and the small cells in the flowing fluid (page 4, paragraph 7). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the method in Schoenbach within a flow-through device, so that large cells are separated from small cells into a second channel where sufficient large electric fields

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are applied separately to the large and the small cells in the flowing fluid as explained by Torsten (page 4, paragraph 7).

Torsten does not teach grounding the electrodes opposite the electrodes which generate the pulse.

Mittal sterilizes food in liquid or semi-liquid forms by flowing it through a pulsing electric field (col.1, lines 5-9). The apparatus having at least two electrodes where one of them is grounded (col.6, lines 11-13). Such an arrangement the electrodes provide a potential distribution and electric field patterns that prevent the growth of microorganisms in the food being treated (col.6, lines 35-37). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the modified method in Schoenbach to include grounded electrodes opposite the pulse generating electrodes, because with such an arrangement the electrodes provide a potential distribution and electric field patterns that prevent the growth of microorganisms in the food being treated as explained by Mittal (col.6, lines 35-37).

As to claim 2, Schoenbach and Torsten do not teach values for the potential difference that is greater than or equal to 100 v. Mittal generates potential difference at 15 kV (col.5, lines 1-4 and col.11, lines 14-17) in a treatment chamber containing apple cider, because this method provides no significant heating of the foodstuff or loss of natural vitamins and flavours (col.11, lines 27-31). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the modified method in Schoenbach to include electric potential value of 15 kV, because this method provides no significant heating of the foodstuff or loss of natural vitamins and flavours as

explained by Mittal (col.11, lines 27-31), while providing adequate pasteurization of the food product.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schoenbach (Bacterial Decontamination of Liquids with Pulsed Electric Fields) in view of Torsten (English Translation, DE 19859459) and Mittal et al (U.S.P.N. 6,093,432) as applied to claim 2 and further in view of Cheever (U.S.P.N. 4,305,000).

The teachings of Schoenbach, Torsten, and Mittal have previously been set forth with respect to claims 2-1.

Schoenbach, Torsten, and Mittal do not teach using Marx generator in connection with spark gap structures. Cheever sterilizes materials using an irradiation apparatus having Marx generator in connection with spark gap structures (col.4, lines 31-34 and col.5, lines 39-44), because such a device allows for a greatly increased range of voltage variation within which operation of the system is permissible (col.2, lines 36-39). As to the limitation that the voltage increase to the voltage maximum of at most 1 MV occurring not longer than 100 microseconds, Cheever considers electric-discharge pulses of the order of 100 to 500 KV as low energy that are generated over 50 to 150 nanoseconds (col.7, lines 2-7. For example, 50 nanosecond is much smaller time interval than 100 microsecond). One of ordinary skill in the art would readily recognize that at a much longer time interval of 100 microsecond as claimed, Cheever's Marx generator produces a steep voltage increase of 1 MV. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the modified method in Schoenbach to include Marx generator, because such a device allows for a



greatly increased range of voltage variation within which operation of the system is permissible as explained by Cheever (col.2, lines 36-39).

***Conclusion***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MONZER R. CHORBAJI whose telephone number is (571)272-1271. The examiner can normally be reached on M-F 9:00-5:30.

9. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**/M. R. C./**

/Jill Warden/  
Supervisory Patent Examiner, Art Unit 1797